



THE NATIONAL ARCHIVES, BESSANT DRIVE, KEW, RICHMOND TW9 4DU

RE-GLAZING THE ATRIA AND LINK GLAZED ROOFS TO THE Q2 BUILDING

1. The Client - The National Archives Background Information

The National Archives is a government department, and also an executive agency of the Ministry of Justice. The National Archives brings together the Public Record Office, Historical Manuscripts Commission, the Office of Public Sector Information and Her Majesty's Stationery Office.

The National Archives is at the heart of information policy – setting standards and supporting innovation in information and records management across the UK, and providing a practical framework of best practice for opening up and encouraging the re-use of public sector information. This work helps inform today's decisions and ensures that they become tomorrow's permanent record.

The National Archives is also the UK government's official archive, containing 900 years of history from Domesday Book to the present, with records ranging from parchment and paper scrolls through to recently created digital files and archived websites.

There is a large number of on-site staff, and together with visitors and members of the public, the total number of people on the site can be up to 2,500 in any day.

2. The Buildings

Set in a landscaped site with water features, the original building (Q1) was designed and constructed in the 1970's, and the style follows the architectural fashion at that time for long, low

horizontal 'layered' buildings with continuous ribbon windows and precast concrete cladding. (The National Theatre on the South Bank is of the same era). Phase 2 of the development (Q2) followed in the 1990's. This is a large public building occupying a site footprint of approximately 13,500 m² (145,250 sq ft), with the roof glazed areas some 15 metres above ground level. It is designed as a series of slate roofed 'pavilions' linked with glazed atriums, forming circulation 'nodes'. The extensive glazing was more in keeping with the emerging architectural style of more open, transparent buildings, compared with the more 'fortress' type enclosure of Q1.

3. The Project

The National Archives have had increasingly, in recent years, to deal with leaks from the glazed atria and link areas in the Q2 building. A report was commissioned which reviewed the re-roofing options available. It was decided to proceed with the option which would involve minimal change to the elevations, and would also be the most sustainable. It would also not affect the strong architectural 'presence' of the building

The original glazing system was an externally pressure plated 'stick' construction; Schueco system, type SK60. The double glazed units were 24mm thick overall, including an air gap. Incorporated in the rooflight glazing were low profile metal smoke vents by Colt, operated on a pneumatic compressed air system.



It was established that the original Shueco glazing system was 'upgradable' and could be retrofitted on the existing structural rafters using thicker, more energy efficient 31mm glass units, with new external pressure plates, thermal breaks, cover caps, etc. Approximately 777 bespoke glazing units, many to shaped angles, etc, had to be measured, manufactured, delivered, moved to the various locations, and fitted in position, over the 12 month contract period.



The existing glass was removed in batches, and the new glass installed in a rolling programme, to minimise Client disruption. Working in occupied areas involved very careful programming, and phased erection of access scaffolding both inside and outside the building.

4. Energy and Sustainability

The new glass units that have been installed meet current Building Regulations standards, and offer a 29% improvement in peak solar gain, and 13% improvement in peak heating load over the original glass.



All the existing glass and aluminium components have been recycled, and all waste has been fully documented by means of a Waste Management Plan.

5. Health and Safety

The roof replacement works have been carried out under the Construction (Design and Management) Regulations 2007 CDM07. Health and safety compliance has been monitored on a weekly basis by Structura UK via their external safety advisors Safety Services. CDM compliance has been reported on monthly by PW Safety Ltd.

The most significant health and safety consideration for this project has been the design scaffolding required to provide access to the roof glass spread across eight areas and requiring internal crash decks to all areas. BS 5975 code of practice for temporary works was adopted at the design stage and temporary works procedures implemented to ensure that the design requirements of the scaffolding were matched with the structural capabilities of the building. This procedure involved a temporary works designer (Crouch Waterfall), temporary works coordinator (PW Safety Limited), temporary works supervisor (Gemini Riteway), structural engineer (Construction Design Partnership), and principal contractor (etde). The completed scaffolding provided full access to all glazed roof areas and included a goods hoist to minimise manual handling and protected walkway to all areas.



Cooperation and communication has been encouraged by the client and principal contractor throughout the project with Bi weekly meetings being held throughout the construction phase. Health and safety and CDM have been included in the minutes and the main contractors report. The air quality was monitored for dust and VOC's (Volatile organic compounds) throughout the project.



The accident statistics show that for 34,000 hours of complicated high risk working at height that there has been one minor accident and one damage accident. There have been no reportable accidents or incidents. This has been achieved while completing the construction of scaffolding; installation of new glazed roof; and repairs to the guttering, without disruption to the business as usual.



6. Project Team

Client	The National Archives Bessant Drive, Kew, Richmond, Surrey, TW9 4DU
Project Manager and Principal Contractor	ETDE FM Elizabeth House 39 York Road London SE1 7NQ ETDE FM Project Office c/o The National Archives Bessant Drive, Kew, Richmond Surrey TW9 4DU
Lead Consultant – Architecture and Town Planning – and Subconsultant to ETDE FM	HTP Architecture LLP Rayleigh House, 2 Richmond Hill Richmond TW10 6QX
Design and Build Specialist Cladding and Glazing Contractor	Structura UK Limited Unit 1 Oakcroft Road Chessington Surrey KT9 1RH
Scaffolding and Temporary works	Gemini Riteway, and Crouch Waterfall Consulting Engineers
CDMC and Temporary Works Co-ordinator	PW Safety 21 Ferndale Road Gravesend Kent DA12 5AF
Cladding Consultant	Cladtech 1 The Hub Farnborough Business Park, GU14 7JP

Cost Control

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Structural Engineer

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Environmental Monitoring

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